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Muruyama

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(54) **DRIVE CIRCUIT FOR ORGANIC EL DEVICE**

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(58) **Field of Search** 315/169.1, 169.3; 345/82, 206

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(57) **ABSTRACT**

It is an object of the present invention to provide a drive circuit for an organic light emitting diode which can suppress a fall in an intensity of light emission to extend the life of the organic light emitting diode. The present invention is a drive circuit for an organic light emitting diode which has plural anodes **A1** to **A3** and plural cathodes B**1** to B**4** intersecting while being opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, sets one of both the poles as drive lines and the other of both the poles as scanning lines, and by scanning all of these scanning lines as one field at a predetermined frequency, presents light emission with the intersection portions as pixels E**11** to E**34**. Capacitors C**11** to C**34** having a predetermined added capacity, to which a bias voltage Vr in a direction of canceling charges to be charged to a parasitic capacity of the pixels E**11** to E**34** is applied, are provided.

6 Claims, 3 Drawing Sheets

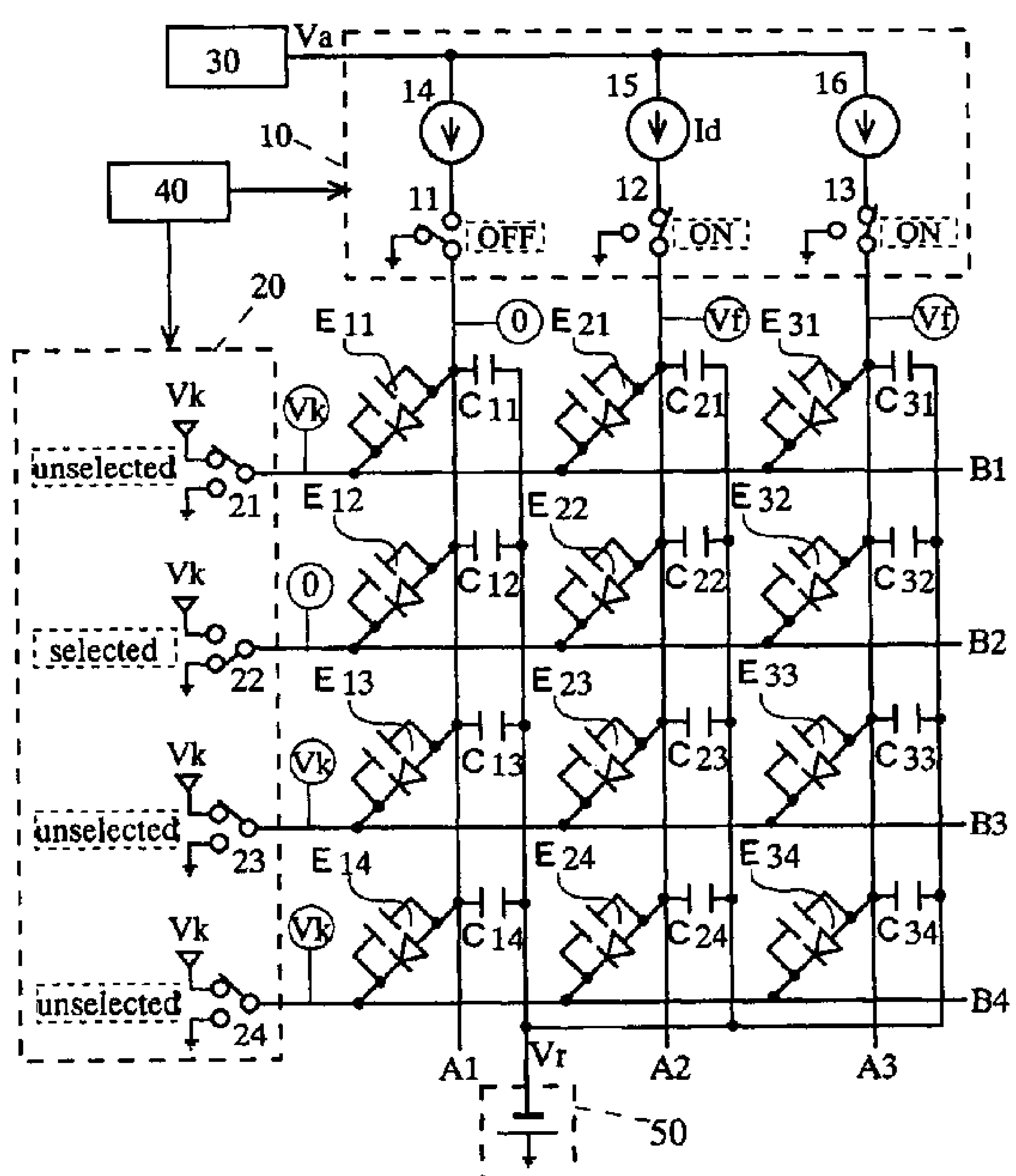
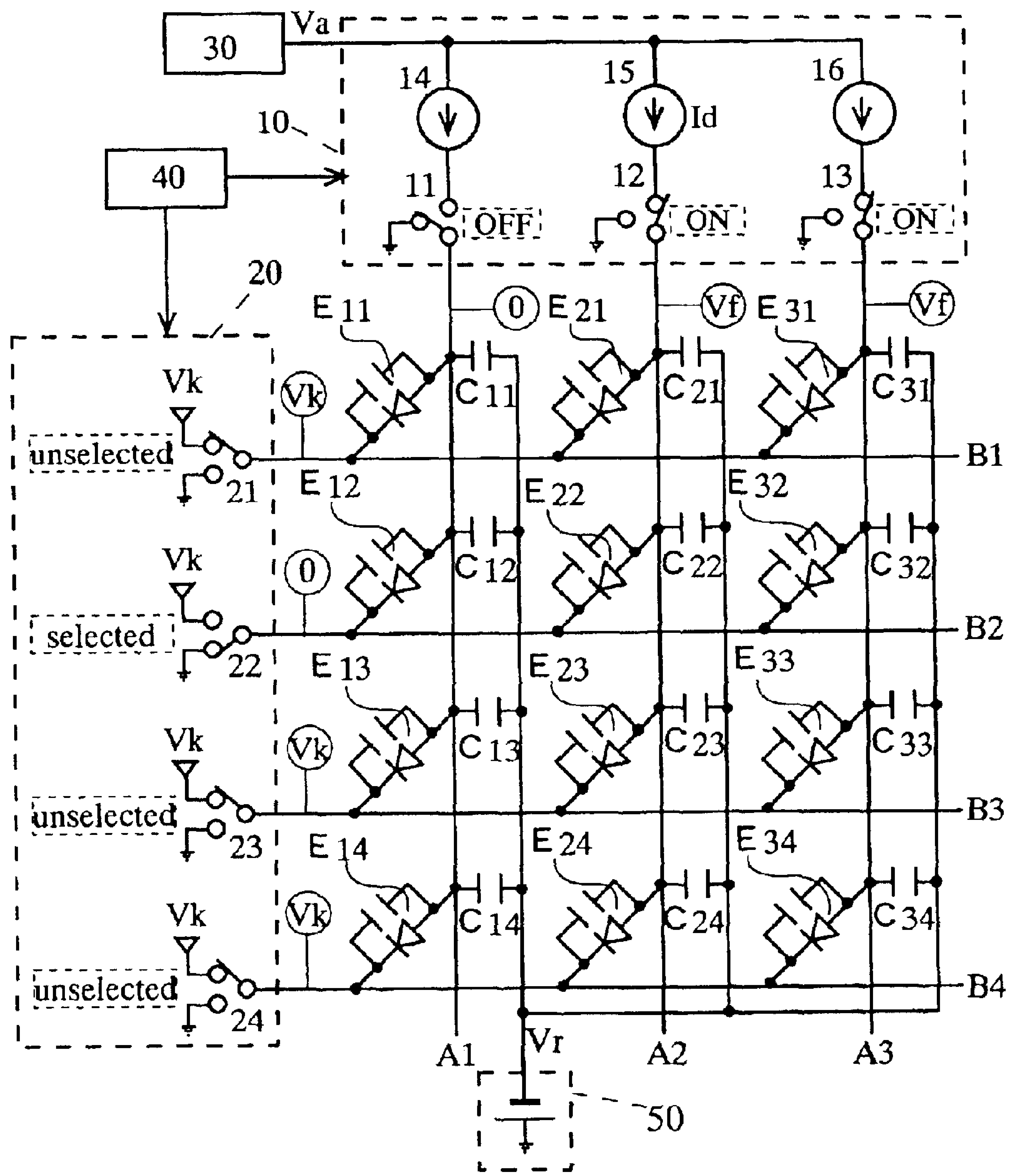


FIG. 1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Va
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14
15
16
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11
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ON
ON
0
Vf
Vf
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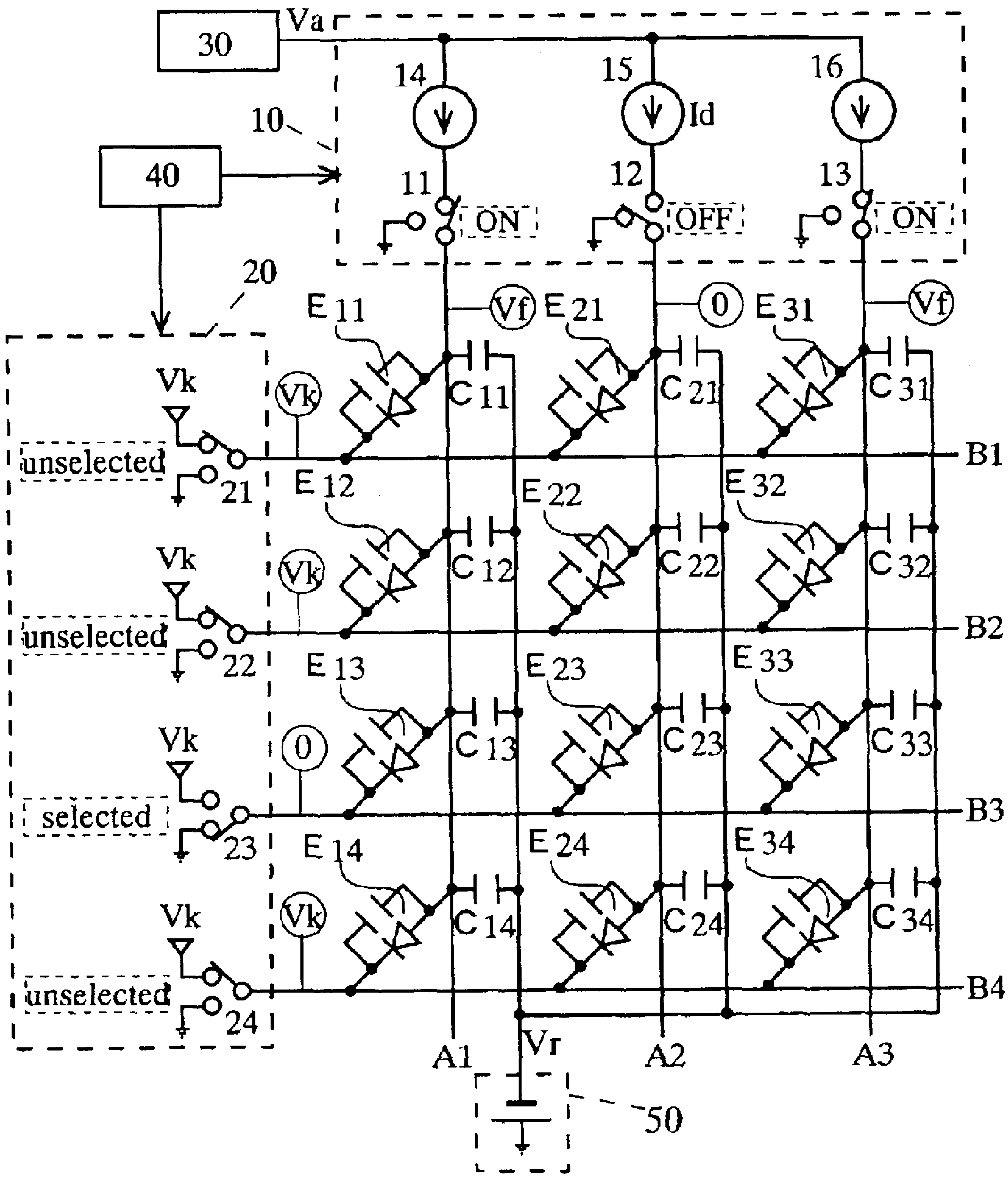
E31
C11
C21
C31
Vk
Vk
unselected
21
B1
E12
E22
E32
C12
C22
C32
Vk
0
selected
22
B2
E13
E23
E33
C13
C23
C33
Vk
Vk
unselected
23
B3
E14
E24
E34
C14
C24
C34
Vk
Vk
unselected
24
B4
A1
Vr
A2
A3
50

FIG. 2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Va
40
10
14
15
16
Id
11
12
13
ON
OFF
ON
20
Vf
0
Vf
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E 31
C 11
C 21
C 31
Vk
Vk
unselected
21
B1
E 12
E 22
E 32
C 12
C 22
C 32
Vk
Vk
unselected
22
B2
E 13
E 23
E 33
C 13
C 23
C 33
Vk
0
selected
23
B3
E 14
E 24
E 34
C 14
C 24
C 34
Vk
Vk
unselected
24
B4
A1
Vr
A2
A3
50

FIG. 3

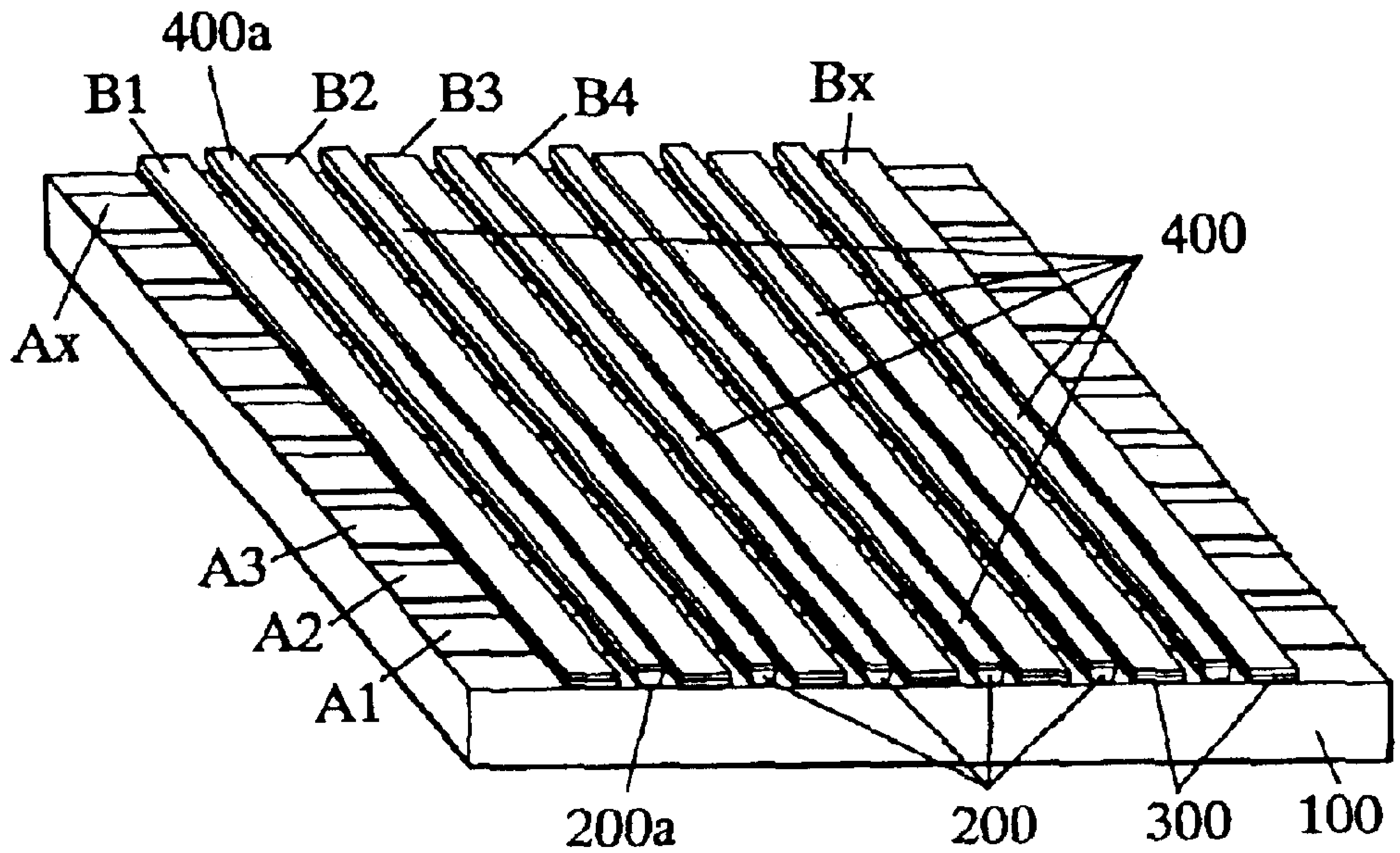
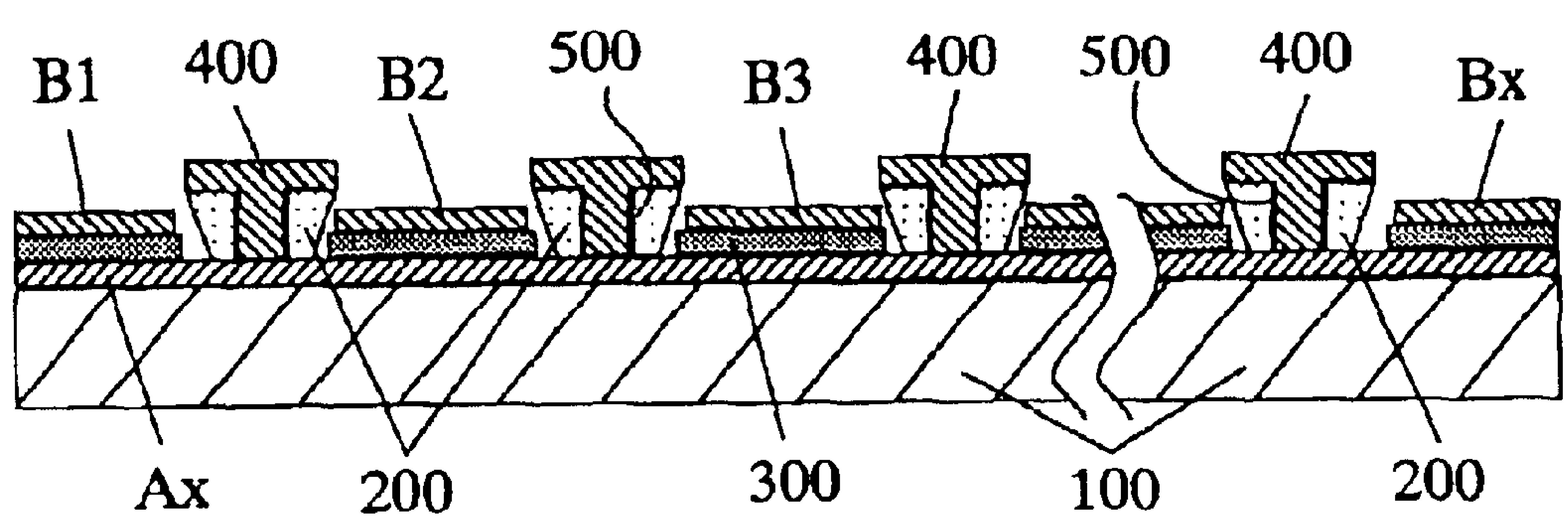

400a
B1
B2
B3
B4
Bx
400
Ax
A3
A2
A1
200a
200
300
100

FIG. 4


B1
400
B2
500
B3
400
500
400
Bx
Ax
200
300
100
200

DRIVE CIRCUIT FOR ORGANIC EL DEVICE

TECHNICAL FIELD

The present invention relates to a drive circuit for an organic light emitting diode (OLED).

BACKGROUND ART

An OLED having a light-emitting layer consisting of an organic compound has been attracting attentions as a device realizing DC low voltage drive. For example, JP-A-6-32307 discloses a structure in which a nodes consisting of a translucent film of an indium tin oxide (ITO) are formed on an upper surface of a substrate consisting of a translucent glass, a hole injection layer, a light-emitting layer, and cathodes consisting of a film of aluminum (Al) are sequentially formed on the anode, and a power supply is connected between the anodes and the cathodes, whereby positive holes generated in the anodes are transmitted to an interface between the hole injection layer and the light-emitting layer, where the positive holes are combined with electrons transmitted from the cathodes to emit a visible ray.

There are known an OLED for performing so-called passive matrix display in which, in the above OLED, the anodes and the cathodes are formed in a plural strip shapes, respectively, and the anodes and the cathodes are arranged in a lattice shape, and one of the anodes and the cathodes are sequentially selected and scanned at a constant time interval with each intersection position of the anodes and the cathodes arranged in the lattice shape as a light emission portion (pixel) and, at the same time, the other of the anodes and the cathodes are driven by a DC constant current circuit serving as a drive source, whereby an arbitrary pixel is caused to emit light, and a driver circuit for the OLED.

Such an OLED has a problem in that, in a long-term use, chargers are accumulated in an intersection between the hole injection layer and the light-emitting layer, whereby a light emission luminance in the pixel falls.

As a technique for solving such a problem, for example, JP-A-9-232074 discloses, as a drive circuit (method) for performing the passive matrix display, a technique with which, at the time of switching to the next scanning line (cathode), all the scanning lines are once connected to a reset voltage zero volt (or power supply voltage) consisting of the same potential for a predetermined time (reset time), whereby a parasitic capacity of the pixels, which should be caused to emit light, is charged by the drive source via drive lines (the anodes) and, at the same time, also charged by a reverse bias voltage of the scanning lines through the parasitic capacity of the pixels, which are not caused to emit light and, consequently, since voltages at both ends of the pixels which should be caused to emit light instantly rise to a potential allowing light emission, the pixels can emit light instantly.

However, connecting all the scanning lines to the reset voltage consisting of the same potential once at the time of switching to the next scanning line makes an operation complex and causes enlargement and complication of a drive circuit. In addition, since the power supply voltage is applied to the unselected scanning lines, an invalid charging current, which does not contribute to light emission, flows to the drive lines via the pixels to increase a consumed current. Further, since all the pixels including the pixels, which should be caused to emit light, are turned off during the reset time, a light emission time is relatively reduced to cause a fall in the light emission luminance. In order to compensate for the fall, a peak luminance should be made higher than usual, which facilitates a luminance fall characteristic to shorten the life of the OLED.

In addition, for example, Japanese Patent No. 3102411 discloses a technique with which a charging circuit for charging the parasitic capacity (junction capacity) to a predetermined potential at the time of rising of drive of the OLED with an output of a pulse generator is provided in constant current drive means for driving the OLED, whereby the junction capacity can be charged in a predetermined time (charging time) and, the OLED is driven without delaying the rising of a pulse, a fall in the light emission luminance can be suppressed.

However, in the correction by the charging circuit, since charges to be cancelled depend upon "current×time" or "voltage×time", setting of a current value, a voltage value, and a time, which are control parameters therefor, is difficult. In addition, by providing the charging time, since all the pixels come into a non-light emission state during that time, and all the pixels including the pixels which should be caused to emit light are turned off, a light emission time is relatively reduced to cause a fall in the light emission luminance. In order to compensate for the fall, a peak luminance should be made higher than usual, which facilitates a luminance fall characteristic to shorten the life of the OLED.

The present invention has been devised in view of such points, and it is an object of the present invention to provide a drive circuit which, through application to an OLED for performing the so-called passive matrix display, can extend the life of the OLED with a simple configuration.

DISCLOSURE OF THE INVENTION

The present invention is a drive circuit for an organic light-emitting diode which has anodes and cathodes opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, and presents light emission with the opposed portions as pixels, in which capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels, are provided.

In addition, the present invention is a drive circuit for an organic light emitting diode which has plural anodes and plural cathodes intersecting while being opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, sets one of both the poles as drive lines and the other of both the poles as scanning lines, and by scanning all of these scanning lines as one field at a predetermined frequency, while sequentially bringing any one of the scanning lines into a selected state, in synchronization with this, connects a drive source to the other of the scanning lines to thereby present light emission with the intersection portions as pixels, in which capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels, are provided.

Further, the present invention is a drive circuit for an organic light emitting diode which has plural anodes and plural cathodes intersecting while being opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, sets one of both the poles as drive lines and the other of both the poles as scanning lines, has a partition for insulating the scanning lines from each other with a dielectric material on at least one of both the poles, and by scanning all of these scanning lines as one field at a predetermined frequency, while sequentially bringing any one of the scanning lines into a selected state, in synchronization with this, connects a drive source to the other of the scanning lines to thereby present light emission with the intersection portions as pixels, in which capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels between a conductor film formed on the partition and the one of both the poles, are provided.

In particular, the conductor film is connected to a bias circuit which is commonly connected to supply the bias voltage.

In particular, the sum of the added capacity is equal to or more than the parasitic capacity.

In particular, the drive source performs a DC current or DC voltage drive, and the bias voltage is a DC voltage.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a circuit diagram of an embodiment of the present invention,

FIG. **2** is a circuit diagram of the same,

FIG. **3** is a main part schematic perspective view of the embodiment of the present invention, and

FIG. **4** is a same main part schematic sectional view of the same.

BEST MODE FOR CARRYING OUT THE INVENTION

The present invention will be described based upon an embodiment shown in the accompanying drawings.

FIGS. **1** and **2** are a drive circuit in accordance with the embodiment and show the case in which the drive circuit has row (horizontal direction)×column (vertical direction)=3×4=12 pixels. For example, in the case in which such an OLED is used as a display device for displaying numbers of an odometer, a clock, and the like of a vehicle in one row, the number of rows is determined according to the number of digits to be displayed, and about sixteen columns are necessary.

Reference symbols A**1** to A**3** denote anodes, B**1** to B**4** denote cathodes, and E**11** to E**34** denote pixels which are located at intersections of the anodes A**1** to A**3** and the cathodes B**1** to B**4** and present light emission. The respective pixels E**11** to E**34** are represented by equivalent circuits of a light-emitting element consisting of a diode characteristic and a parasitic capacity connected to this in parallel. However, in the following description and the drawings, assuming that characteristics of the pixels E**11** to E**34** are equal, the parasitic capacity of an arbitrary pixel Exx is assumed to be Cel. Then, a drive circuit **10** is connected to the anodes A**1** to A**3**, and a scanning circuit **20** is connected to the cathodes B**1** to B**4**.

A drive voltage circuit **30** for outputting a drive voltage Va is connected to the drive circuit **10**. The drive circuit **10** has switches **11** to **13** for selecting the anodes A**1** to A**3** between the drive circuit **10** and the anodes A**1** to A**3** and, by turning "ON" these switches **11** to **13**, connects DC constant current circuits **14** to **16** serving as drive sources for drive to the anodes A**1** to A**3**.

The scanning circuit **20** has switches **21** to **24** for sequentially scanning the respective cathodes B**1** to B**4** as scanning lines, and one ends of the respective switches **21** to **24** are connected to a reverse voltage terminal to which a cutoff voltage Vk volt supplied from a drive voltage circuit **30** is applied and the other ends thereof are connected to a ground terminal of zero volt, and these switches **21** to **24** are changed over to the reverse voltage terminal (unselected) and the ground terminal (selected) in order.

Then, the drive circuit **10** and the scanning circuit **20** are controlled by a display control circuit **40**. Note that, in the figure, in the switches **11** to **13** of the drive circuit **10**, the case in which a current Id is applied to any of the pixels E**11** to E**34** by the current circuits **14** to **16** is represented as "ON" and the case in which the current Id is no applied is represented as "OFF". In addition, in the switches **21** to **24** of the scanning circuit **20**, the case in which the switches **21** to **24** are connected to an anode being scanned among the anodes B**1** to B**4** is represented as "selected" and the case in which the switches **21** to **24** are connected to an anode not being scanned is represented as "unselected". Consequently, only the pixels, for which the drive circuit **10** is "ON" and the scanning circuit **20** is "selected", among the pixels E**11** to E**34** emit light.

One ends of capacitors C**11** to C**34** are connected to each connection point of the pixels E**11** to E**34** and the anodes A**1** to A**3**, respectively, and the other ends of these capacitors C**11** to C**34** are collectively connected to a bias circuit **50**. This bias circuit **50** supplies a bias voltage Vr (=Vk,>Vf) volt to the capacitors C**11** to C**34**. Note that an arbitrary capacitor Cxx is selected and connected so as to have an added capacity Cr equal to or more than the parasitic capacity Cel of the pixel Exx to which the one end thereof is connected. However, as described above, if characteristics of the pixels E**11** to E**34** are equal (i.e., the parasitic capacity Cel is the same in all the pixels E**11** to E**34**), only there is one kind of the added capacity Cr.

Control of light emission by such a drive circuit will be described. In the following description, the case in which, after scanning the cathode B**2** as a scanning line to cause the pixels E**22**, E**32** to emit light, the cathode B**3** is scanned to cause the pixels E**13**, E**33** to emit light will be described.

In order to scan the cathode B**2** to cause the pixels E**22**, E**32** to emit light, as shown in FIG. **1**, the switch **22** of the scanning circuit **20** is changed over to the ground terminal, which is the selected side, and the cathode B**2** is scanned. The other switches **21**, **23**, **24** are changed over to the reverse voltage terminal which is the unselected side. Therefore, a potential on the pixel side of the scanning circuit **20** is zero volt for the switch **22** and Vk volt for the other switches.

Current circuits **15**, **16** are connected to the anodes A**2**, A**3** by the switches **12**, **13** of the drive circuit **10**, but the other switch **11** is connected to the ground terminal. Therefore, a potential on the pixel side of the drive circuit **10** is Vf volt, which is a predetermined potential, for the switches **12**, **13** and is zero volt for the other switch.

At this point, only the pixels E**22**, E**32**, for which the drive circuit **10** is "ON" and the scanning circuit **20** is "selected", are biased in a forward direction, the drive current Id is flowing to the pixels E**22**, E**32** from the current circuits **15**, **16**, and a charge Qon to be charged to these pixels E**22**, E**32** is $Cel \times Vf > 0$.

A charge Qoff**1** to be charged to the other pixel E**12**, for which the scanning circuit **20** is "selected", is zero, the charges Qon and Qoff have a relation of Qon>Qoff, and the pixel E**12** does not emit light and a current does not flow to the pixel E**12**.

A charge Qoff**2** to be charged to the pixels E**21**, E**23**, E**24**, E**31**, E**33**, E**34**, for which the drive circuit **10** is "ON" and the scanning circuit **20** is "unselected", is $Cel \times (Vk - Vf) < 0$.

That is, since Vk and Vf have opposite polarities, a difference between them is low compared with Vf, the charges Qon and Qoff2 have a relation of Qon>Qoff2, and the pixel Exx with the charge Qoff2 does not emit light and almost no current flows to the pixel Exx.

A charge Qoff3 to be charged to the pixels E11, E13, E14, for which the drive circuit **10** is "OFF" and the scanning circuit **20** is "unselected", is Cel×Vk<0. That is, since Vk and Vf have opposite polarities, the charges Qon and Qoff3 have a relation of Qon>Qoff3, and the pixel Exx with the charge Qoff3 does not emit light and almost no current flows to the pixel Exx.

A charge Qc1 to be charged to the capacitors C21 to C24, C31 to C34 connected to the pixel Exx, for which the drive circuit **10** is "ON", is Cr×(Vr−Vf)>0. This is because Vk and Vf are set to the same polarity.

A charge Qc2 to be charged to the capacitors C11 to C14 connected to the pixel Exx, for which the drive circuit **10** is "OFF", is Cr×Vr>0. This is because Vk and Vf are set to the same polarity.

Next, in order to scan the cathode B3 to cause the pixels E13, E33 to emit light, as shown in FIG. **2**, the switch **23** of the scanning circuit **20** is changed over to the ground terminal, which is the selected side, and the cathode B3 is scanned. The other switches **21**, **22**, **24** are changed over to the reverse voltage terminal which is the unselected side. Therefore, a potential on the pixel side of the scanning circuit **20** is zero volt for the switch **23** and Vk volt for the other switches.

Current circuits **14**, **16** are connected to the anodes A1, A3 by the switches **11**, **13** of the drive circuit **10**, but the other switch **12** is connected to the ground terminal. Therefore, a potential on the pixel side of the drive circuit **10** is Vf volt, which is a predetermined potential, for the switches **11**, **13** and is zero volt for the other switch.

At this point, only the pixels E13, E33, for which the drive circuit **10** is "ON" and the scanning circuit **20** is "selected", are biased in a forward direction, the drive current Id is flowing to the pixels E13, E33 from the current circuits **14**, **16**, and a charge Qon to be charged to these pixels E13, E33 is Cel×Vf. On the other hand, the charge Qoff of the other pixel Exx is as described above (see Qoff1 to Qoff3), the charges Qon and Qoff have a relation of Qon>Qoff, and the other pixel Exx with the charge Qoff does not emit light.

In addition, the charge Qc1 to be charged to the capacitors C1*n*, C3*n* (n=1 to 4, same in the following description) and the charge Qc2 of the capacitor C2*n* are also as described above.

When shifting from FIG. **1** to FIG. **2**, the charge Qoff3 charged to the pixels E11, E13, E14 is cancelled by the charge Qc2 charged to the capacitors C11, C13, C14 due to a relation of Qoff3=Qc2.

Similarly, the charge Qoff2 charged to the pixels E31, E33, E34 is cancelled by the charge Qc1 charged to the capacitors C31, C33, C34 due to a relation of Qoff2=Qc1.

On the other hand, the charge charged to the pixel E2*n* and the capacitor C2*n* connected to the same is discharged because the switch **12** is grounded.

Note that, since the charge Qoff1 charged to the pixel E12 is zero, there is no movement of charge in the switching from FIG. **1** to FIG. **2**, and the charge Qc2 charged to the capacitor C12 connected to the pixel E12 does not change.

In addition, in the pixel E32, although the charge falls from the charge Qon (FIG. **1**) to the charge Qoff2 (FIG. **2**), since the capacitor C32 connected to the pixel E32 tries to keep the charge Qc1 thereof constant, an excess charge Qon−Qoff2 moves from the pixel E33 connected to the ground terminal via the switch **23**.

In this way, in the pixel Exx and the capacitor Cxx connected to the pixel Exx, the charge charged to the pixel Exx (in the above-mentioned example, pixels E11, E13, E14, E31, E33, E34) can be cancelled, and deterioration due to the charge can be improved.

In addition, in the case in which the pixel Exx (in the above-mentioned example, the pixel E32) changing from light emission to non-light emission and the pixel Exx (in the above-mentioned example, the pixel E33) changing from non-light emission to light emission are connected to the identical line (in the above-mentioned example, the anode A3) of the drive circuit **10**, since an excessive charge thereof moves from the former pixel to the latter pixel, injection of charges into the latter pixel is performed with high efficiency in a short time, rising of light emission becomes steep.

In the case in which the pixel Exx shifts from non-light emission to light emission, that is, in a process in which a potential on the drive circuit **10** side rises from zero volt to Vf volt, assuming that a voltage rise is ΔV, a charge not contributing to light emission of the pixel Exx=Cel×ΔV and a charge of the capacitor Cxx connected to the pixel Exx= Cr×ΔV, which are accumulated according to the parasitic capacity Cel and the added capacity Cr, are cancelled each other because the voltage rise ΔV is equal.

For this purpose, the charge which is accumulated in the pixel Exx and does not contribute to light emission and the charge accumulated in the capacitor Cxx connected to the pixel Exx are required to have opposite polarities and the latter charge is required to be set larger than the former charge in order to completely eliminate the former charge. Consequently, Cel≦Cr is desirable.

Note that, although the example in which the DC constant current circuits **14** to **16** are used as drive sources is described in FIGS. **1** and **2**, the present invention can be realized in the same manner as describe above even if a DC constant voltage circuit is used. In any case, if a drive source is a DC drive source, it is desirable that the bias voltage Vr is a DC voltage in order to charge the added capacity Cr of the capacitor Cxx for canceling a charge to be charged to the parasitic capacity Cel of the pixel Exx.

Next, a specific forming method of the capacitor Cxx will be described.

As a structure of an OLED for performing so-called passive matrix display, for example, JP-A-8-315981 discloses, as shown in FIGS. **3** and **4**, an OLED which consists of a substrate **100** having anodes A1, A2, A3 . . . Ax serving as plural first display electrodes formed on a surface thereof, plural electrical insulating partitions **200** projecting above the substrate **100** which causes at least a part of the anodes A1, A2, A3 . . . Ax, at least a single layer of thin film **300** of an organic EL medium formed on the exposed parts of the anodes A1, A2, A3 . . . Ax, respectively, and cathodes B1, B2, B3, B4 . . . Bx serving as plural second display electrodes formed on this thin film **300**.

In such a structure, in forming the cathodes B1, B2, B3, B4 . . . Bx, a material of the cathodes B1, B2, B3, B4 . . . Bx, for example, aluminum are evaporated on the partition **200**, whereby a conductor film **400** consisting of the same material as the cathodes B1, B2, B3, B4 . . . Bx is also formed on the partition **200**.

Here, a dielectric is used as a material forming the partition **200**, at least one of the anodes A1, A2, A3 . . . Ax (e.g., last Ax) is set as a connection line connected to the bias circuit **50** shown in FIGS. **1** and **2** not contributing to display, and the conductor film **400** is electrically connected to this.

More specifically, as shown in FIG. **4**, in forming a through hole **500** in a portion opposed to the anode Ax of each partition **200** and forming the cathodes B**1**, B**2**, B**3**, B**4** . . . Bx and the conductor film **400** on the partition **200**, apart of materials thereof enters the through hole **500** to electrically connect the conductor film and the anode Ax, whereby the conductor film **400** is connected to the bias circuit **50** (see FIGS. **1** and **2**) which is commonly connected and supplies the bias voltage Vr. Thus, the structure can be simplified.

Consequently, the capacitor Cxx can be obtained between the conductor film **400** and the anodes A**1**, A**2**, A**3** . . . Ax-**1** on the partition **200**.

Note that the partition **200** is sandwiched by the anodes A**1**, A**2**, A**3** . . . Ax in almost all the portions thereof and, for example, the capacitor Cxx, which is obtained between a conductor film **400***a* and the anodes A**1**, A**2**, A**3** . . . Ax on a partition **200***a* located between the cathode B**1** and the cathode B**2**, becomes the capacitor Cxx which affects both a group of the pixels E**11**, E**21**, E**31** . . . formed of the anodes A**1**, A**2**, A**3** . . . and the cathode B**1** and a group of the pixels E**12**, E**22**, E**32** . . . formed of the anodes A**1**, A**2**, A**3** . . . and the cathode B**2**.

Therefore, in the case in which such a structure is adopted, a structure in which the pixel Exx and the capacitor Cxx corresponds one to one as shown in FIGS. **1** and **2** is not realized. Consequently, it is necessary to set a sum of the added capacity Cr of the capacitor Cxx to be equal to or more than a sum of the parasitic capacity Cel for the Exx, and more preferably to be relatively larger taking into account the number of pixels Exx which are affected by the capacitor Cxx.

The present invention can be realized not only in the above-mentioned OLED for performing so-called passive matrix display but also in an OLED for performing segment display as long as the present invention can be applied to the OLED in the same manner and the OLED has anodes and cathodes opposed to each other and an organic layer having at least light-emitting layer intervening between both the poles, and presents light emission with the opposed portions as pixels by providing a capacitor having a predetermined added capacity to which a bias voltage in a direction of canceling charges to be charged to a parasitic capacity of the pixels.

INDUSTRIAL APPLICABILITY

As described above, in the present invention, reduction of a light emission time according to setting of a reset time or a charging time required by the related art is eliminated, and a light emission peak luminance falls. In addition, a light emission rising characteristic is improved to have better linearity for gradation, and marketability is improved. Further, it becomes unnecessary to add a special timing circuit to a drive sequence, and a drive circuit can be reduced in size and simplified. Thus, provision of a drive circuit which can extend the life of the OLED with a simple structure can be realized.

What is claimed is:

1. A drive circuit for an organic light-emitting diode which has anodes and cathodes opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, and presents light emission with the opposed portions as pixels, characterized in that capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels, are provided.

2. A drive circuit for an organic light emitting diode which has plural anodes and plural cathodes intersecting while being opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, sets one of both the poles as drive lines and the other of both the poles as scanning lines, and by scanning all of these scanning lines as one field at a predetermined frequency, while sequentially bringing any one of the scanning lines into a selected state, in synchronization with this, connects a drive source to the other of the scanning lines to thereby present light emission with the intersection portions as pixels, characterized in that capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels, are provided.

3. A drive circuit for an organic light emitting diode which has plural anodes and plural cathodes intersecting while being opposed to each other and an organic layer having at least a light-emitting layer intervening between both the poles, sets one of both the poles as drive lines and the other of both the poles as scanning lines, has a partition for insulating the scanning lines from each other with a dielectric material on at least one of both the poles, and by scanning all of these scanning lines as one field at a predetermined frequency, while sequentially bringing any one of the scanning lines into a selected state, in synchronization with this, connects a drive source to the other of the scanning lines to thereby present light emission with the intersection portions as pixels, characterized in that capacitors having a predetermined added capacity, to which a bias voltage is applied in a direction of canceling charges to be charged to a parasitic capacity of the pixels between a conductor film formed on the partition and the one of both the poles, are provided.

4. A drive circuit for an organic light emitting diode according to claim **3**, characterized in that the conductor film is connected to a bias circuit which is commonly connected to supply the bias voltage.

5. A drive circuit for an organic light emitting diode according to any one of claims **1** to **3**, characterized in that the sum of the added capacity is equal to or more than the parasitic capacity.

6. A drive circuit for an organic light emitting diode according to any one of claims **1** to **3**, characterized in that the drive source performs a DC current or DC voltage drive, and the bias voltage is a DC voltage.

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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 6,803,729 B2

DATED : October 12, 2004

INVENTOR(S) : Junichi Maruyama

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Title page,
Item [54], Title, change "**DRIVE CIRCUIT FOR ORGANIC EL DEVICE**" to
-- **DRIVE CIRCUIT FOR ORGANIC LIGHT EMITTING DIODE** --.

Signed and Sealed this

Nineteenth Day of April, 2005

JON W. DUDAS
Director of the United States Patent and Trademark Office